ELSEVIER

Bone Vol. 24, No. 2
February 1999:157–158

CASE REPORT

A Case of McCune–Albright Syndrome Mimicking Paget's Disease of Bone

Ş. PALANDUZ,[1] K. ÇEFLE,[1] Ş. ÖZTÜRK,[1] R. TANAKOL,[2] C. TAŞÇIOĞLU,[3] T. KOLDAŞ,[4] N. B. ERTEN,[3] and M. A. KARAN[3]

Department of Internal Medicine, Divisions of [1]Medical Genetics, [2]Endocrinology and Metabolism, [3]General Internal Medicine, and [4]Department of Plastic and Reconstructive Surgery, Faculty of Medicine, Istanbul University, Istanbul, Turkey

McCune–Albright syndrome is a genetic disorder characterized by polyostotic fibrous dysplasia, precocious puberty, and café-au-lait spots. The main defect is a missense mutation in the *GNAS1* gene, which results in the constitutive activation of the α-subunit of the Gs protein leading to overproduction of cAMP.[4] Clinical presentation is variable due to the mosaic pattern of involvement of the tissues.[2]

Herein, we present a case of McCune–Albright syndrome (MAS) displaying the radiologic and biochemical features of Paget's disease of bone.

A 24-year-old woman was referred to our hospital due to skeletal deformities and facial dysmorphism. Her history included regular menses beginning at the age of 5 months, and bone deformities becoming evident at the age of about 5 years. Recently, she had been operated on due to a maxillary tumor; its pathological assessment yielded a diagnosis of fibrous dysplasia.

On physical examination she was measured to be 90 cm in height. Facial asymmetry with depression of the left maxillary area was noted. She had extreme kyphoscoliosis and her right leg (tibia) had a bowing deformity. Routine blood chemistry showed a calcium level of 9.3 mg/dL, a phosphorus level in the low-normal range (2.9 mg/dL, normal 2.7–4.5), and a high alkaline phosphatase level (834 U/L, normal 42–98). Plasma levels of T_3, T_4, TSH, LH, FSH, estradiol, DHEAS-S, testosterone, free testosterone, growth hormone, prolactin, cortisol, and ACTH were all in the normal range. The parathyroid hormone level was 59.5 pg/mL (normal 9–55). Urinary hydroxyproline excretion was 392.3 mmol/mL creatinine (normal <30).

Radiological examination of the cranium revealed diffuse sclerosis of the skull base, thickening of the calvarium, and radiolucent areas (**Figure 1**). These changes were thought to be most compatible with Paget's disease of bone. Both femurs showed widening of the bone shaft, ground glass appearance, and cortical thinning. Whole-body scintigram revealed dense uptake of the radiolabel in an asymmetric pattern (**Figure 2**). MRI scan of the sella revealed no pituitary adenoma.

The presence of pathologically confirmed polyostotic fibrous dysplasia and a history of precocious puberty was considered decisive for diagnosis of MAS. The absence of café-au-lait spots does not exclude such a diagnosis, considering the mosaic nature of the disease.

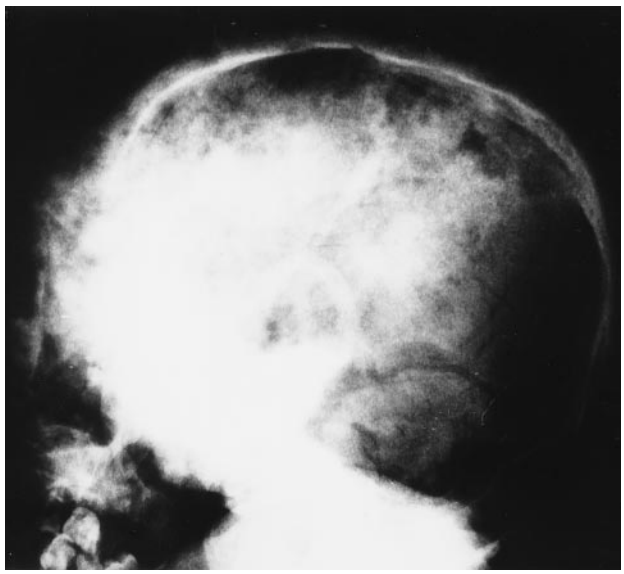

Figure 1. Lateral radiograph of the cranium showing calvarial thickening, radiolucent areas resembling osteoporosis circumscripta, and striking osteosclerosis involving particularly the skull base.

The most striking feature of the case was radiological findings closely mimicking those of Paget's disease of bone. In the cranial radiographs, calvarial thickening, radiolucent areas resembling osteoporosis circumscripta, and sclerotic changes were considered compatible with Paget's disease. Although these two disorders can cause thickening of the bones, X-ray findings of polyostotic fibrous dysplasia mimicking those of Paget's disease have been emphasized very infrequently.[6] Coexistence of both clinical situations has also been reported.[3] Histologically, prominent osteoblasts on the surface of bone trabeculae and abnormal lamellar bone are characteristics of Paget's disease and distinguish it from fibrous dysplasia.[5] However, differentiating between Paget's disease and polyostotic fibrous dysplasia should not be difficult on clinical grounds considering the very early onset of symptoms in the latter, particularly in the present case where the bony deformities had become evident at the age of about 5 years, which has not been seen in Paget's disease. The high urinary hydroxyproline excretion and high serum alkaline phosphatase observed in our case may reflect the high bone turnover associated with polyostotic fibrous dysplasia, a feature also shared by Paget's disease of bone.[1] These findings suggest

Address for correspondence and reprints: Dr. Şükrü Palanduz, Fevzi Paşa Caddesi, Testereci Sokak, 1/10, Karagümrük, Fatih, 34230 Istanbul, Turkey.

8756-3282/99/$20.00
PII S8756-3282(98)00166-5

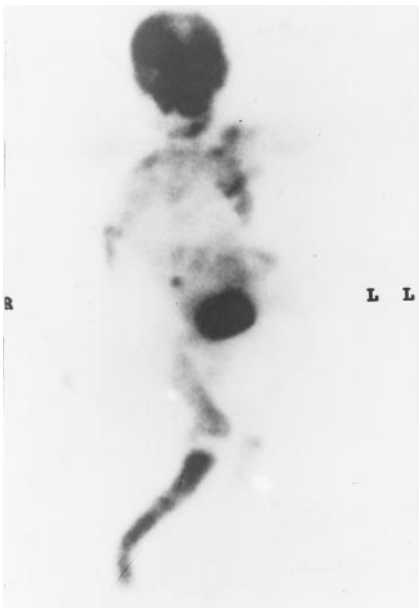

Figure 2. Whole-body bone scintigram shows asymmetric uptake of the radiolabel with striking involvement of the cranium.

that Paget's disease of bone should be considered in the differential diagnosis of polyostotic fibrous dysplasia, especially in regard to radiological findings.

References

1. Alvarez, L., Peris, P., Pons, F., Guañabens, N., Herranz, R., Monegal, A., Bedini, J. L., Deulofeu, R., Martínez de Osaba, M. J., Muñoz Gómez J., and Ballesta, A. M. Relationship between biochemical markers of bone turnover and bone scintigraphic indices in assessment of Paget's disease activity. Arthritis Rheum 40:461–468; 1997.
2. Horton, W. A. Abnormalities of bone structure. In: Rimoin, D. L., Connor, J. M., and Pyeritz, R. E., Eds. Principles and Practice of Medical Genetics. New York: Churchill Livingstone; 1996; 2842–2848.
3. Jones, S. M., Kingston, H., Mitra, D., MacLeod, T. I., and Bhalla, A. K. Coexisting polyostotic fibrous dysplasia and Paget's disease. Clin Exp Rheumatol 14:187–190; 1996.
4. Schwindinger, W. F., Francomano, C. A., Levine, M. A., et al. Identification of a mutation in the gene encoding the alpha subunit of the stimulatory G protein adenylyl cyclase in McCune–Albright syndrome. Proc Natl Acad Sci USA 89:5152–5156; 1992.
5. Singer, F. R. and Krane, S. M. Paget's disease of bone. In: Avioli, L. V. and Krane, S. M., Eds. Metabolic Bone Diseases and Related Disorders. Philadelphia: Saunders; 1990; 546–615.
6. Wolf, W. and Ebner, W. Polyostotic fibrous dysplasia of bone with Paget-like changes of the skull and facial bones—radiological features and diagnostic problems. Rontgenblatter 35:70–77; 1982.

Date Received: July 21, 1998
Date Revised: October 6, 1998
Date Accepted: October 13, 1998